

ABSTRACT

The invention is a new method and apparatus that can be used to detect, recognize, and analyze people or other objects in security checkpoints, public-places, parking lots, or in similar environments under surveillance to detect the presence of certain objects of interests (e.g., people), and to identify their activities for security and other purposes in real-time. The system can detect a wide range of activities for different applications. The method detects any new object introduced into a known environment and then classifies the object regions to human body parts or to other non-rigid and rigid objects. By comparing the detected objects with the graphs from a database in the system, the methodology is able to identify object parts and to decide on the presence of the object of interest (human, bag, dog, etc.) in video sequences. The system tracks the movement of different object parts in order to combine them at a later stage to high-level semantics. For example, the motion pattern of each human body part is compared to the motion pattern of the known activities. The recognized movements of the body parts are combined by a classifier to recognize the overall activity of the human body.